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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,742	01/17/2006	Daisuke Endo	G12-197996C/KK	1838

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VIENNA, VA 22182-3817

EXAMINER
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MARKS, JACOB B

ART UNIT	PAPER NUMBER
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1795

MAIL DATE	DELIVERY MODE
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06/10/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/564,742

**Applicant(s)**

ENDO ET AL.

**Examiner**

JACOB MARKS

**Art Unit**

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 February 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 4-8, 13-15, 17-21 and 24-29 is/are pending in the application.  
4a) Of the above claim(s) 6-8, 19 and 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 4, 5, 8, 13-15, 17, 18, 21, and 24-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. Applicant's amendment dated 02-25-2010 was received. Claims 1, 4-8, 13-15, 17-21, and 24-29 are pending. Claims 25-29 are new. Claims 1, 7, 19, and 20 were amended. Claims 2, 3, 9-12, 16, 22, and 23 are cancelled.
2. The text of those sections of 35 U.S. code not included in this action can be found in the previous Office Action dated 12-24-2009.

***Claim Objections***

3. The claim objection on claim 1 is withdrawn because the claim has been amended.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:  

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims 21 and 28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claim recites "a weight percent of said at least one element in terms of oxide is in a range of 0.05% to 4% of a total weight of said base particles and said at least one element in terms of oxide." It is unclear from the claim language whether "in terms of oxide" means the weight percentage relative to the amount of oxide material in the base material or whether it means the weight percentage of an oxide of the element relative to the total amount of the base particles

and the elemental oxide. The Examiner interprets this recitation to mean the weight percentage of an oxide of the element relative to the total amount of the base particles and the elemental oxide.

***Claim Rejections - 35 USC § 103***

6. The claim rejections under 35 U.S.C. 103(a) as being unpatentable over Shiozaki et al. (WO 03/044881) in view of Howard et al. (US Pat. Pub. 2002/0141937) on claims 1-5, 13-15, 17, and 18 is withdrawn because claim 1 has been amended.

7. Claims 1, 4, 5, 13-15, 17, 18, 21, and 24-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiozaki et al. (WO 03/044881, for English translation see US Pat. No. 7,393,476) in view of Cho et al. (US Pat. Pub. 2003/0211391).

Regarding claims 1, 4, 5, 17, 18, 24, 25, and 29, Shiozaki et al. discloses a positive active material containing lithium (base particle) (abstract). Inherent in a positive active material containing lithium is the ability to dope and release lithium ions. Shiozaki et al. further disclose a positive active material containing lithium comprising  $\text{Li}_x\text{Mn}_a\text{Ni}_b\text{Co}_c\text{O}_2$  (base particle) (see abstract). Shiozaki further discloses that the positive active material may comprise  $\text{LiCoO}_2$  which corresponds to point A on fig. 1. Shiozaki et al. further discloses a positive active material corresponding to the claimed composition wherein  $a=0.3$ ,  $b=0.3$ ,  $c=0.4$  and  $0.95 < x < 1.3$  (see abstract; fig. 1). Shiozaki et al. also disclose that the structure of the positive active material is an  $\alpha\text{NaFeO}_2$  structure (abstract).



electrode can inhibit the reaction between the electrolyte and the active material (par. 62). Therefore, it would have been obvious to one of ordinary skill in the art to combine the active material of Shiozaki et al. with a surface treatment layer containing a rare earth element because Cho et al. discloses that such a surface treatment can inhibit reaction between the electrolyte and active material.

Regarding claim 13, it is implicit in Shiozaki et al. that the positive active material is for use in a positive electrode (abstract). Shiozaki et al. further discloses that the positive active material is for use in a lithium secondary battery (abstract).

Regarding claim 14, Shiozaki et al. disclose a lithium secondary battery, with a positive electrode, a negative electrode capable of doping and undoping lithium ions and a nonaqueous electrolyte (col. 12 lines 42-50).

Regarding claim 15, Shiozaki et al. disclose that the batteries using the positive active material have obtained voltages as high as 5 V and that the batteries have been tested at voltages of 4.6 V (col. 29 line 63-col. 30 line 4).

Regarding claims 21 and 28, the combination of Shiozaki and Cho does not specifically disclose that weight percentage of the elemental oxide is between 0.5% and 4%. However, Cho discloses that the amount of the element added for the surface treatment, which in this example was aluminum, can effect the thermal stability of the electrode surface (par. 64-66 (examples 1 and 2), par. 77-79 (table 2)). Therefore, the concentration of the surface elemental oxide added to the active material is a known result effective variable. The optimization of a known result effective variable is within the ambit of one of ordinary skill in the art. See, *In re Boesch*, 617 F.2d 272, 205 USPQ

215 (CCPA 1980); MPEP 2144.05(II)(B). Therefore, it would have been obvious to one of ordinary skill in the art to optimize the concentration of the element in the surface coating relative to the active material because Cho teaches that the concentration of the surface coating element can affect the thermal stability of the active material.

Regarding claims 26 and 27, Shiozaki et al. discloses that it is for use in a lithium non-aqueous electrolyte battery (col. 1 lines 13-21). Lithium batteries inherently have negative electrodes containing negative active material that is able to dope and undope lithium ions. Shiozaki et al. disclose that the batteries using the positive active material have obtained voltages as high as 5 V and that the batteries have been tested at voltages of 4.6 V (col. 29 line 63-col. 30 line 4).

8. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shiozaki et al. and Howard et al. as applied to claims 1-5, 13-15, 17, and 18, above, further in view of Tsushima et al. (US Pat. No. 6,294,292).

Regarding claim 16, Shiozaki et al. disclose that the negative electrode material may be composed of carbonaceous materials (col. 13 lines 51-60). The combination of Shiozaki and Howard does not teach that the negative electrode material has 1.05 to 1.5 times the capacity of the positive electrode. However, Tsushima et al. disclose that the positive electrode for a lithium battery should have between 0.1 and 1.2 times the capacity of the negative electrode because at ranges where the positive electrode capacity is greater 1.2 times the capacity of the negative electrode, lithium deposition on the negative electrode is likely (abstract, col. 2 lines 19-37). Therefore it would have

been obvious to one of ordinary skill in the art to make the capacity of the negative electrode between 1.05 and 1.5 times the capacity of the positive electrode in the Shiozaki/Howard combination because Tsushima teaches that in this range lithium deposition may be prevented.

### ***Response to Arguments***

9. Applicant's arguments with respect to claims 1, 4, 5, 8, 13-15, 17, 18, 21, and 24 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JACOB MARKS whose telephone number is (571)270-7873. The examiner can normally be reached on Monday through Friday 7:30-5:00 alt Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on 571-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jacob Marks/

/Dah-Wei D. Yuan/  
Supervisory Patent Examiner, Art Unit 1795